CLEANING UP THE OCEANS

Science

~ StandFor Projects

Teacher Notes

Arts & Languages	History & Humanities	Science
Baroque	Education in Athens	A-maize-ing corn
Cave paintings	Life in a medieval castle	Biofuels
Cinema: the seventh art	Napoleon Bonaparte	Cleaning up the oceans
Components of a comic book	Rise and fall of the Berlin Wall	How much water do you use a day?
Dance	Scribes in Ancient Egypt	How they communicate
Egyptian hieroglyphs	The *Belle Époque* and the Armed Peace	Hurricanes
From the stone to the Internet	The city of the gods	Nuclear contamination
How does a newsroom work?	The first universities	Petroleum
How to become cultured?	The Great Pyramid of Giza	Preventing droughts
National Library	The Macedonian Empire	Star maps
Renaissance Florence	The medieval table	The El Niño phenomenon
The cultural leap	Who are the major Greek gods and goddesses?	The legacy of an idea
		The origins of earthquakes
		The ozone layer
		The senses
		Uses of water

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StandFor

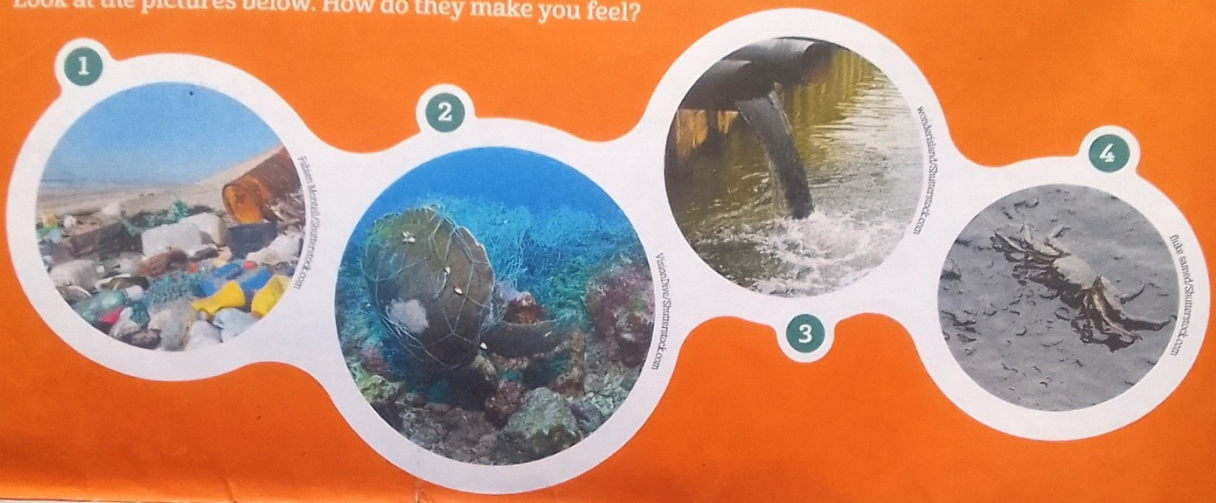
6th Pier

#EXPLORING THE TOPIC

1 Read the quote below and discuss.

> **"With every drop of water you drink, every breath you take, you're connected to the sea. No matter where on Earth you live. Most of the oxygen in the atmosphere is generated by the sea."**
>
> – Sylvia Earle, Oceanographer

2 Look at the pictures below. How do they make you feel?



Personal answer.

Ask students to write down four words that express how they feel.

3 Number the words below that match the pictures above.

a) (4) oil spill
b) (3) industrial discharge
c) (2) entangled animals
d) (1) debris

Personal answer.

WOULD YOU LIKE TO BE A VOLUNTEER AND HELP KEEP THE OCEAN CLEAN?

4 Look at the following signs and discuss.

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Joseph Sohm/Shutterstock.com

a) Do you believe that signs like these can change people's behavior?
b) Did you know that in some countries people can be fined if they throw things away improperly?
c) What's your opinion about that?
d) Does this happen in your country?
e) Do you think a law like this can bring positive results?

K-W-L chart

I *know* about this topic
I *want* to know
I *learned*

Before reading the infographic, make sure that students understand the words **litter**, **dump**, and **trash**. Include other words such as **garbage**, **waste**, **rubbish**, and **debris**. This will make the reading comprehension easier. Teach the pronunciation of these words if necessary.

A MODEL TO BE FOLLOWED

CLEANING UP THE OCEANS

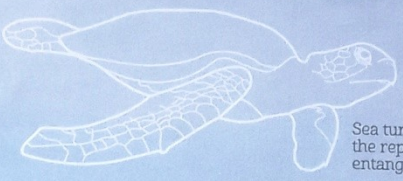
The International Coastal Cleanup (ICC) is an annual event from the Ocean Conservancy, an organization whose goal is to remove trash and debris from the world's beaches. It takes place on the third Saturday in September. Each year, volunteers from every continent come together to help clean up the ocean and raise awareness about this serious problem.

VOLUNTEERS IN ACTION

In 2007 more than 370,000 volunteers around the world participated in the annual International Coastal Cleanup campaign. They removed almost 9 million pounds of debris from over 33,000 miles of shoreline (or about 267 pounds per mile). Volunteers from 76 countries took part, which was ten more than the previous year. This cleanup has been taking place since 1986, but it isn't limited to beaches: about 8,300 scuba divers removed about 161,000 pounds of litter during underwater cleanups.

A DEADLY TRAP

Each year, marine debris kills a million seabirds and 100,000 seals and turtles. In 2007, volunteers found 235 entangled animals, most of them victims of fishing lines and nets. Look at the table to the right and see which animals were found.



Sea turtles are among the reptiles found entangled in debris.

Animal	Total
Amphibians	1
Birds	81
Fish	63
Invertebrates	49
Mammals	30
Reptiles	11
Total	**235**

TOP TEN DEBRIS ITEMS

The following items account for 84% of the total found in 2007:

	Item	Quantity	%
1	Cigarettes and cigarette filters	1,971,551	27.2%
2	Food wrappers	693,612	9.6%
3	Bottle caps	656,088	9.1%
4	Plastic bags	587,827	8.1%
5	Plastic bottles	494,647	6.8%
6	Cups, plates, knives, forks and spoons	376,294	5.2%
7	Glass bottles	349,143	4.8%
8	Cigarette tips	325,893	4.5%
9	Straws and stirrers	324,680	4.5%
10	Beverage cans	308,292	4.3%
Total		6,088,027	84.1%

ICC WORLDWIDE

This map shows a high degree of volunteer participation in the ICC program in the Americas, but a very low level in Africa. It also shows a high level of trash on shorelines in tropical regions, where many tourist resorts are located.

Non-participating countries
Participating countries

Level of marine litter pollution in coastal environments
High
Moderate
Low

16

pounds of debris is the average amount collected by each participant in 2007. Fifty percent of these volunteers worked on shorelines in the USA

BAD HABITS

Ninety percent of the debris found worldwide in 2007 was related to recreational activities and smoking. Activities such as fishing and boating accounted for about six percent of the trash.

Shoreline and recreational activities **57.4%**

Medical and personal hygiene **0.8%**

Dumping activities **2.0%**

Ocean and waterway activities **6.3%**

Smoking-related activities **33.6%**

%
27.2%
9.6%
9.1%
8.1%
6.8%
5.2%
4.8%
4.5%
4.5%
4.3%
84.1%

#GUIDED READING

1. Start reading the infographic and talk about the pollution caused by human activities. Emphasize the importance of global actions and how they are carried out by independent organizations. This content will be reviewed later. Explain how the infographic gives statistics about the cleaning of beaches, and that it's not necessary to read these in order.

1 Title and introduction

Look at the background image, paying attention to the clothes and the equipment used by the volunteers. Then read the title and the introduction.

- Have you ever heard of this organization, this event, or anything similar?
- What is the goal of actions like this? How important are they?

2. Remind students that there are governmental organizations, such as IBAMA (Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis), that are responsible for monitoring nature areas, among other things. There is also the United Nations Environment Programme (UNEP) and the Intergovernmental Panel on Climate Change (IPCC). However, these organizations need government support to avoid interference from large corporations. Mention that efforts at environmental conservation, protection and activism, as well as the promotion of concerns and discussions about environmental sustainability, are due to independent organizations such as Greenpeace, the World Wide Fund for Nature (WWF, which was previously called the World Wide Fund), and the Ocean Conservancy. All these organizations rely on volunteer help and donations.

2 Subheadings

Read the subheadings carefully. Look at the illustrations and captions, and pay attention to how the text boxes organize the pieces of information and are related to nonverbal information such as pictures and maps. This subheading describes the actions of volunteers and refers to the background image. Like many of international environmental protection organizations, the Ocean Conservancy relies on volunteers to give their time to make the event possible.

A MODEL TO BE FOLLOWED

CLEANING UP THE OCEANS

The International Coastal Cleanup (ICC) is an annual event from the Ocean Conservancy, an organization whose goal is to remove trash and debris from the world's beaches. It takes place on the third Saturday in September. Each year, volunteers from every continent come together to help clean up the ocean and raise awareness about this serious problem.

VOLUNTEERS

VOLUNTEERS IN ACTION

In 2007 more than 370,000 volunteers around the world participated in the annual International Coastal Cleanup campaign. They removed almost 9 million pounds of debris from over [illegible] miles of shoreline (an average of 267 pounds per mile). Volunteers from 76 countries took part, which was ten more than the previous year. This cleanup has been taking place since 1986, but it isn't limited to beaches: about 8,300 scuba divers removed about 161,000 pounds of litter during underwater cleanups.

A DEADLY TRAP

Each year, marine debris kills a million seabirds ar[illegible] seals and turtles. In 2007, volunteers found 235 en[illegible] animals, most of them victims of fishing lines and [illegible] the table to the right and see which animals were f[illegible]

Sea tur[illegible] the rep[illegible] entang[illegible]

Animal	Total
Amphibians	1
Birds	81
Fish	63
Invertebrates	49
Mammals	30
Reptiles	[illegible]

TOP TEN DEBRIS ITEMS

The following items account for 84% of the [illegible] found in 2007:

	Item	Qu
1	Cigarettes and cigarette filters	
2	Food wrappers	
3	Bottle caps	
4	Plastic bags	
5	Plastic bottles	
6	Cups, plates, knives, forks and spoons	
7	Glass bottles	
8	Cigarette tips	
9	Straws and stirrers	
10	Beverage cans	
Total		6,088

3. Talk about the delicate balance between marine life and its importance to life on Earth. Explain that life on Earth came from the oceans, and how it is so dependent on them.
Students are expected to answer the question by mentioning the bar graphs that show the number of entangled animals, or the pie charts that show how many animals in each group were found.

3 Use of tables

Study the data shown in the tables. This text format was chosen to more clearly present the relationships between the pieces of information. The subheading points to the number of entangled animals found in 2007. In fact, this number may be higher, as plenty of debris and dead animals don't make it to shore.

- Is there another way to present these data?

Remember: Earth's oceans occupy nearly seventy-one percent of its surface; phytoplankton produce seventy percent of the oxygen in the Earth's atmosphere; and the interactions between the oceans and atmosphere play an important role in the planet's climate.

Suggested activity

Form groups and ask students to compare the table that shows the debris found during the cleanup with the graph that shows where the debris came from. Then ask them to create an infographic that recommends one or two actions (corrective or preventive) for each of the problems mentioned. Tell them to write short texts and use images to make the infographic more appealing to readers. Students are to make a solid and coherent connection between the activities and the garbage produced, and the actions they recommend to prevent or resolve the problems.

ICC WORLDWIDE

This map shows a high degree of volunteer participation in the ICC program in the Americas, but a very low level in Africa. It also shows a high level of trash on shorelines in tropical regions, where many tourist resorts are located.

5. Talk to students about the various elements shown on the map. Mention that the areas in blue have fewer inhabitants, so there is a low degree of human interference. Most have very cold weather, and as such are not considered tourist destinations. They are, however, subject to human activities, such as whaling off Norway and Greenland. In areas with greater industrial and technological development, such as the USA, Japan, China and Europe, we see higher levels of trash on the shorelines. Pollutants are dumped into the ocean by many industries. The Brazilian coast is among the areas with low levels of maritime pollution, even though it is home to many large cities and tourist destinations. Brazil is famous for its leadership in sustainability practices. Ask students to think about the elements which pertain to their own beaches, such as: the size of the nearest city; if there are trashcans next to the shore; number of tourists; and if there is a garbage collection system and/or selective waste collection.

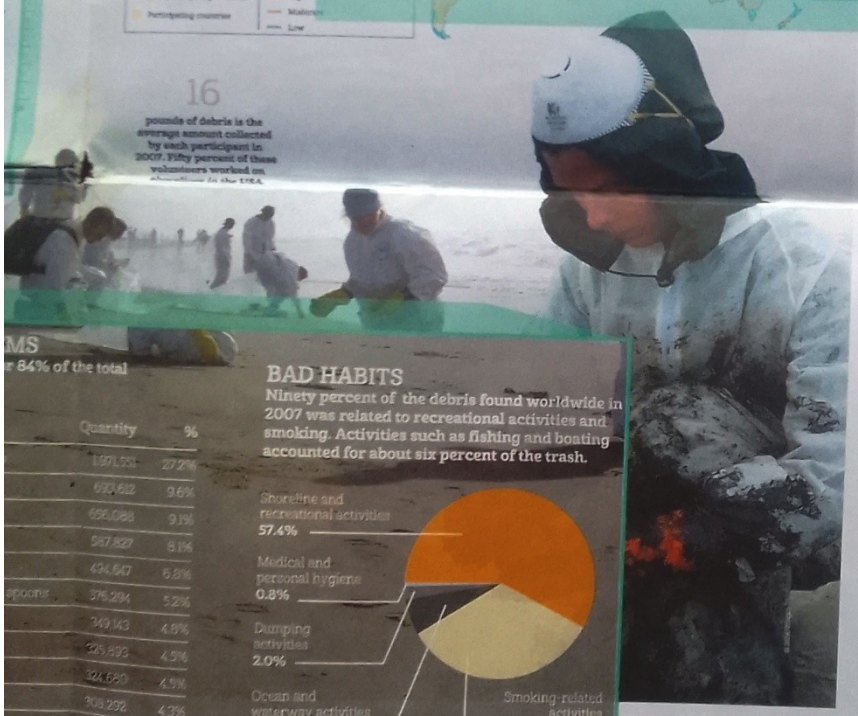
5 Maps

Look at the map and read the caption. The map is used to establish the spatial dimension of information and to geographically locate the data given. Note that the degree of maritime pollution is higher in places with more residents or tourists, or even if the location has been inhabited for longer. Using the map, describe the Brazil's situation regarding its participation in the coastal cleanup and the amount of trash on its beaches.

- Are the beaches you usually visit clean or not?
- Do you find litter on the shore?

16

pounds of debris is the average amount collected by each participant in 2007. Fifty percent of these volunteers worked on



MS

84% of the total

	Quantity	%
	1,991,553	27.2%
	692,612	9.6%
	656,088	9.1%
	587,827	8.1%
	494,647	6.8%
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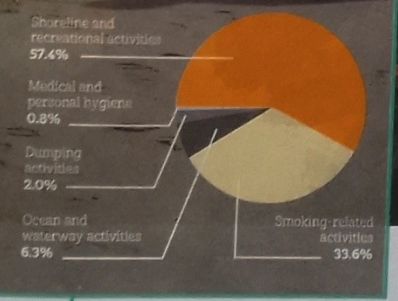

4. Tell the students that part of the problem could be resolved with preventive measures, which are easy to carry out and can be performed individually, such as properly throwing away the garbage produced. Talk about how important the selective waste collection, the recycling programs and the awareness campaigns are. It is also relevant to say that the garbage that arrives on the shores and oceans isn't restricted only to the costal activities. Debris and pollutants can come from rivers, domestic sewage, and industrial discharges. They can also be carried ashore by the wind or result from ocean and waterway activities, from cruise and commercial ships, and from oil platforms. Besides the deaths caused by oil spill, marine animals die either because they become entangled in debris or they mistake it for prey and eat it.

4 The main threats, in numbers

Analyze and compare the data in the table with that of the pie graph. They make reading comprehension easier because the information and numbers are presented in a visually organized way. The table shows the debris most commonly found during the ocean cleanup. The pie graph groups the types of trash collected into activities associated with them.

- Is it possible to minimize or even reverse this situation?

#POST READING

Tell students that they don't need to read the entire infographic again to find the information they need. They just have to scan the text to find specific information. Remind them that this reading technique can always be used. When looking at new texts, it's best to start with reading the instructions and then looking for the information in the text. This will help them save time.

1 Did you notice that this infographic has a lot of numbers? What do they refer to?

a) 370,000 volunteers that participated in the 2007 campaign
b) 76 countries that took part
c) 8,300 scuba divers
d) 161,000 pounds of litter found underwater
e) 100,000 seals and birds that die each year because of debris
f) 235 entangled animals found

Scanning is a speed-reading technique. Use it to look quickly through a text in order to find specific information.

2 Use the infographic to help answer the questions.

a) What does ICC stand for?
It stands for International Coastal Cleanup.

b) In which month does the event happen?
It happens in September.

c) What is the main cause of marine animals' entanglement?
Fishing lines and nets.

d) How many volunteers were there on American shorelines?
There were about 190,000.

A fact is a true statement. It can be proven. An opinion is a person's thought or idea. Can you distinguish between the two?

3 Label the pictures using words from the text.

4 Read the following statements related to the topic and decide if the sentences are fact (F) or opinion (O).

a) (o) We did our best to clean everything we could.
b) (f) Plastic is the most common type of trash found in the ocean.
c) (f) Pollutants are dumped into the ocean at an alarming rate every single day.
d) (o) Whether we work alone on a deserted beach or with a small group of friends, we know we are part of a larger community.

Learner log

5 Now, write two sentences. One must be a fact and the other must be an opinion. Share them with the class.

Personal answer.

#RESEARCH TIME

Imagine you and your friends are going to work as volunteers for the ICC. However, you want to do more than just volunteer. You want to be a voice for the ocean, so you need to know more about the subject. Do some research to find out:

- what people can do to help;
- why it is important to reduce, reuse and recycle plastic;
- how people can reduce the amount of plastic used; and
- how pollution has affected climate change and other environmental aspects.

Project to-do list

#IT'S YOUR TURN

Now that you've studied the problems and solutions for polluted oceans, it's time to raise awareness about these problems and show people that "united we stand." Together we can make the world a better place to live in. Imagine you all want to spread the word about the problems that affect our marine environment, and how to help solve them. In groups, create a slogan that is going to stick in people's minds and convince them to be part of your campaign.

Project schedule

Who

A slogan is an easily remembered phrase often used with company logos and in advertising campaigns. They are claimed to be the most effective way of drawing people's attention.

What

To make your slogan and logo known, make a T-shirt using cardboard. You will need: glue, felt pens, paper pads, scissors, recycled material, etc. Write your slogan and draw your logo on the T-shirt. Decorate the front and the back of the T-shirt.

Nicholas Bacon/Shutterstock.com

Remember: a slogan doesn't really work without a logo, so design a logo first. However, don't forget to integrate the slogan and the logo.

When

Bring to class examples of well-known companies and their slogans. Show the importance of the words used, the font, colors, size, etc. The slogans students create have to encourage people to do something. Read all the slogans and suggest any necessary adjustments before students start making their T-shirts.

Hang all the T-shirts on a clothesline.

It's time to vote for the best T-shirt and slogan. Pay attention to the words, logo, font, colors used, etc.

It may be useful to make a template of a T-shirt, so all the groups have the same size and model. At the end of the project, hang the T-shirts on a clothesline. Students can vote for the best T-shirt and slogan. They are not supposed to vote for their own T-shirt! Do students agree with the results?